	Type	Hits	Search Text	DBs
1	BRS	179	abnormal near dispersion	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
2	BRS	8	(abnormal near dispersion) and (liquid near crystal)	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
3	BRS	0	(abnormal near dispersion) and dye and polarizer	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
4	BRS	4	(abnormal near dispersion) and dye	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
5	BRS	2845	khan.in.	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
6	BRS	135	khan.in. and dye	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
7	BRS	8	(khan.in. and dye) and polarizer	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
8	BRS	1150	maximum near interference	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
9	BRS	4249	minimum near interference	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR

	Type	Hits	Search Text	DBs
10	BRS	50	(minimum near interference) and polarizing	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
11	BRS	73	(maximum near interference) and polarizer	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
12	BRS	39	(minimum near interference) and polarizer	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
13	BRS	1	((minimum near interference) and polarizer) and dye	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
14	BRS	10	((maximum near interference) and polarizer) and dye	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
15	BRS	9	(((maximum near interference) and polarizer) and dye) and display	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
16	BRS	21	"2700919"	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
17	BRS	1	"2700919" and (liquid near crystal)	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
18	BRS	0	("2700919" and (liquid near crystal)) and dye	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR

	Type	Hits	Search Text	DBs
19	BRS	9	((maximum near interference) and polarizing) and dye	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
20	BRS	6	(((maximum near interference) and polarizing) and dye) and (liquid near crystal)	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
21	BRS	2	((minimum near interference) and polarizing) and dye	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
22	BRS	80	(maximum near interference) and polarizing	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
23	BRS	321692	liquid near crystal	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
24	BRS	24	((maximum near interference) and polarizing) and (liquid near crystal)	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
25	BRS	10	((minimum near interference) and polarizing) and (liquid near crystal)	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
26	BRS	31	"6566" and siemens	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR
27	BRS	6	"006566"	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR

planar liquid crystal layer, with twist structure, rotation of optical axis of liquid crystal within the thickness of layer A by 90 deg. , and sections
positioned in or outside focuses of focusing optical elements, or the device (2) is made in form of sectioned clearance achromatic birefringent plate.

An INDEPENDENT CLAIM is also included for liquid crystal indicator element containing layer of liquid crystal positioned between first and second plate,
with electrodes and polarizer as claimed above placed at least on one plate, and at least one polarizer containing at least one layer A, having at least one
refraction index increasing with increase of wavelength of polarized light, and at least one layer A of at least one polarizer made in form of elements with
differing phase delay value and/or differing direction of polarization axis.

USE - Light polarizer can be used in lighting fixtures, optical modulators, matrix systems for light modulation, in protection of special value paper and
trade marks, in production of polarization films, glass (including laminated) for car industry, building and architecture field and advertising industry, and
also in production of protective spectacles and shields, etc. Liquid crystal indicator element can be used e.g. in flat liquid crystal displays, including
projection-type ones.

ADVANTAGE - The use of highly effective light polarizer as claimed results in production of color or monochromic liquid crystal indicator elements showing
higher luminosity, increased color saturation, good deflection characteristics, and no shadows.

DESCRIPTION OF DRAWING(S) - The drawing shows cross-section of polarizer made in form of film or plate, with optically coinciding microlens system and
sectioned metallic mirror on its first surface, and the device for separation of non-polarized light beams into polarized passing and reflected beams
(including at least one birefringent layer with optical axis directions stable within the thickness of the layer) applied onto the second surface of the film.

linearly polarized (within the drawing plane) reflected light component 3

isotropic layer 11

linearly polarized (perpendicular to the drawing plane) passing light component 13

non-polarized beam (of incident or passing light) 14

linearly polarized (perpendicular to the drawing plane) passing light component 17

section of 1/4-wave phase-delaying plate 25

metallic mirror 37

lens made of isotropic material 38

non-polarized beam (of incident or passing light) 41

device for separation of non-polarized light beams into linearly polarized passing and reflected components 42

CHOSEN-DRAWING: Dwg.15/27

TITLE: Light polarizer for e.g. liquid crystal display (LCD)

INVENTOR: BELYAEV, S V; KARPOV, I N ; KHAN, I G ; MALIMONENKO, N V ; MIROSHIN, A A ; SHISHKINA, E J ; VOROZHTSOV, G N ; ARKHIPOVA, S A ; MASANOVA, N N ; SHISHKINA E YA, ; SHISHKINA E YU,

PATENT-ASSIGNEE: NIOPIK RES CENTRE[NIOPR] , MIROSHIN A A[MIROI], NIOPIK RUSS FED SCI CENTRE[NIOPR], NIOPIK METALS RES INST[NIOPR], VOROZHTSOV G N[VOROI]

PRIORITY-DATA: 1998RU-0104984 (March 16, 1998) , 1997RU-0121028 (December 16, 1997) , 1998RU-0101616 (January 12, 1998) ,
1998RU-0103709 (February 24, 1998), 1998RU-0103710 (February 24, 1998) , 1998RU-0103736 (February 24, 1998),
1998RU-0103743 (February 24, 1998) , 1998RU-0104867 (March 2, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 9931535 A1	June 24, 1999	R	106	G02B 005/30
JP 2001517329 W	October 2, 2001	N/A	120	G02B 005/30
EP 961138 A1	December 1, 1999	E	000	N/A
RU 2136025 C1	August 27, 1999	N/A	000	G02B 005/30
CN 1251176 A	April 19, 2000	N/A	000	G02B 005/30
RU 2140094 C1	October 20, 1999	N/A	000	G02B 005/30
RU 2140097 C1	October 20, 1999	N/A	000	G02F 001/13
RU 2140662 C1	October 27, 1999	N/A	000	G02F 001/13
RU 2140663 C1	October 27, 1999	N/A	000	G02F 001/13
RU 2143125 C1	December 20, 1999	N/A	000	G02B 005/30
RU 2143128 C1	December 20, 1999	N/A	000	G02F 001/13
RU 2147759 C1	April 20, 2000	N/A	000	G02B 005/30
KR 2000071135 A	November 25, 2000	N/A	000	G02B 005/30

DESIGNATED-STATES: CN JP KR US AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE CH DE ES FR GB GR IT LI NL

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
WO 9931535A1	N/A	1998WO-RU00415	December 15, 1998
JP2001517329W	N/A	1998WO-RU00415	December 15, 1998
JP2001517329W	N/A	1999JP-0532415	December 15, 1998
JP2001517329W	Based on	WO 9931535	N/A
EP 961138A1	N/A	1998EP-0964580	December 15, 1998
EP 961138A1	N/A	1998WO-RU00415	December 15, 1998
EP 961138A1	Based on	WO 9931535	N/A
RU 2136025C1	N/A	1997RU-0121028	December 16, 1997
CN 1251176A	N/A	1998CN-0803683	December 15, 1998
RU 2140094C1	N/A	1998RU-0101616	January 12, 1998
RU 2140097C1	N/A	1998RU-0103709	February 24, 1998
RU 2140662C1	N/A	1998RU-0103736	February 24, 1998
RU 2140663C1	N/A	1998RU-0103743	February 24, 1998
RU 2143125C1	N/A	1998RU-0104867	March 2, 1998
RU 2143128C1	N/A	1998RU-0103710	February 24, 1998
RU 2147759C1	N/A	1998RU-0104984	March 16, 1998
KR2000071135A	N/A	1998WO-RU00415	December 15, 1998

KR2000071135A	N/A	1999KR-0707424	August 16, 1999
KR2000071135A	Based on	WO 9931535	N/A

INT-CL (IPC): G02B005/30, G02F001/13 , G02F001/1335

RELATED-ACC-NO: 1999-278412, 1999-528851 , 1999-528885 , 1999-610573, 1999-610574 , 1999-610575

ABSTRACTED-PUB-NO: WO 9931535A

BASIC-ABSTRACT:

NOVELTY - Polarizer includes birefringent layer with anisotropic absorption, and has abnormal dispersion.

DETAILED DESCRIPTION - Polarizer includes at least one birefringent layer, and at least one such layer has anisotropic absorption property and at least one refraction index which increases with increase of wavelength of polarized light. At least one birefringent anisotropically-absorbing layer A has thickness sufficient to create interference extreme at the polarizer outlet at least for one linearly polarized light component (preferably interference minimum for one linearly polarized light component and interference maximum for other orthogonal linearly polarized light component. Polarizer preferably additionally contains at least one optically isotropic layer whose refraction index is equal or very close to one of indexes of birefringent layer.
Polarizer also preferably contains one birefringent layer whose one refraction index is equal or very close to the one of indices of layer A, while remaining refraction indices of both these layers are different. At least one layer A contains at least two fragments of optional shape, having different colors and/or directions of polarization axis, and the polarizer preferably contains another such layer, with additional layer of transparent colorless or colored material between two A layers. Polarizer may additionally contain orienting layer made of inorganic materials and/or polymeric materials, or it may additionally include light-reflecting layer, preferably metallic. At least one of A layers is preferably formed on support (preferably consisting of birefringent plate or film), preferably at angle 45 deg. to basic optical axis of support. The polarizer includes: Polarizing device (1) separating the number of non-polarized light beams constituting incident light beamed at polarizer into the same number of identical pairs of variously polarized light beams, and device (2) for changing polarization of at least one group of identically polarized light beams included in the number of variously polarized light beams, with device (1) made in form of focusing optical elements, optically coordinated with device (2), and containing at least one birefringent layer adjacent to at least one optical isotropic layer. At least one layer A is preferably made in form of assembly of volumetric or phase lens, while focusing optical element is made as zone plate, preferably amplitude zone plate whose even zones contain at least one layer A, adjacent to at least one optically isotropic layer, while non-even zones are made of optically isotropic material. Zone plate can be made in form of phase zone plate whose at least one refraction index is changing downward in at least one direction according to calculated rule. Device (2) preferably contains sectioned clearance layer A, in form of half-wave birefringent plate or layer with sections positioned in or outside focuses of focusing optical elements, or with sections in form of quarter-wave plates, positioned outside focuses of focusing optical elements. Alternatively, device (2) is made in form of sectioned clearance polymerized

planar liquid crystal layer, with twist structure, rotation of optical axis of liquid crystal within the thickness of layer A by 90 deg. , and sections
positioned in or outside focuses of focusing optical elements, or the device (2) is made in form of sectioned clearance achromatic birefringent plate.

An INDEPENDENT CLAIM is also included for liquid crystal indicator element containing layer of liquid crystal positioned between first and second plate,
with electrodes and polarizer as claimed above placed at least on one plate, and at least one polarizer containing at least one layer A, having at least one
refraction index increasing with increase of wavelength of polarized light, and at least one layer A of at least one polarizer made in form of elements with
differing phase delay value and/or differing direction of polarization axis.

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trade marks, in production of polarization films, glass (including laminated) for car industry, building and architecture field and advertising industry, and
also in production of protective spectacles and shields, etc. Liquid crystal indicator element can be used e.g. in flat liquid crystal displays, including
projection-type ones.

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